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hagen thought the phenomenon was only at a few miles distance, but as from *all* stations in Denmark it was standing near the horizon in the southwest, where the Sun lately had been setting, it was evident that the fireball must have passed over Northwestern Germany. This opinion was soon confirmed. From Hamburg and Bremen the phenomenon was seen rather in a *westerly* direction, from Wilhelmshafen to the *south*, from Amsterdam to the southeast, and from Cöln to the *north.*

The fireball lighted up the whole country, and thousands of spectators were frightened and looked astonished at the sparkling object that, like another moon, was traveling across the sky. In fact it is told that some children in a German village rushed into the house, crying: "Papa! Mama! Come out directly! The moon fell down from the sky just now, and is sticking in Minnermann's tree!"

The meteor whirled about on the last part of its path, then suddenly it burst into pieces with a rain of sparks, flashed up in a bluish light, dashed downward, and disappeared. Afterwards a large train was seen, at first forming a straight line, then a broken one like a lightning-flash. After that the figure of an S was seen and after twelve to fifteen (from Hamburg is said thirty) minutes the faint remainders of the train finally disappeared. It is not yet certain *where* the fireball fell to the ground, if it fell at all. Perhaps it took place in the southern part of Oldenburg.

In the past year a little transit-instrument (GUSTAV HEYDE, in Dresden) has been erected in the garden, and a wedge-photometer (JOEPFER, in Potsdam) for observations of variable stars has been attached to the 3-inch Steinheil refractor. Since 1900, April 1st, the private observatory at Odder has received a yearly grant from the Danish Government.

PLANETARY PHENOMENA FOR MARCH AND APRIL, 1901.

By MALCOLM MCNEILL.

MARCH.

The Sun is at the vernal equinox, and spring begins, March 20th, 11 P.M., P. S. T.

Mercury is an evening star at the beginning of the month, setting just about an hour after sunset, but it rapidly nears the Sun and passes inferior conjunction on March 7th. After that it is a morning star, rapidly moving away from the Sun, and by the end of the month is well out toward greatest west elongation, and rises about an hour before sunrise.

Venus is still nearer the Sun than during February, and at the end of the month rises only a few minutes before it. The interval is considerably shortened for points in the northern hemisphere by the fact that the planet arrives at its greatest heliocentric south latitude toward the close of the month, and is apparently several degrees south of the Sun. The conditions for visibility during the month are very poor.

Mars is the only one of the planets in good position for evening observation (except *Neptune*, which requires a telescope). It is above the horizon nearly the entire night, and its brightness makes it quite conspicuous, although toward the end of the month it has begun to be perceptibly less brilliant than it was during opposition in February. It increases its distance from the Earth about twelve millions of miles during the month, and at the end is about seventy-five millions from us. It moves about 7° westward and northward during the month in the constellation *Leo*, and on March 9th it passes about 4° north of *Regulus*, the brightest star of the constellation, and about 1° south of η *Leonis*, the star at the junction of handle and blade of the Sickle.

Jupiter and *Saturn* are still morning objects, but toward the close of the month they rise before 2 A. M. They are both in the constellation *Sagittarius*, a few degrees north of the group known as the Little Dipper. Their distance apart changes from about 6° on March 1st, to about 4½° on March 31st, *Jupiter* being somewhat higher up than *Saturn*.

Uranus rises about two hours earlier than *Jupiter* and *Saturn*, and is in the southern extension of *Ophiuchus*.

APRIL.

Mercury is a morning star throughout the month, and comes to greatest west elongation on April 3d. Its apparent distance from the Sun is then nearly 28°, which is 10° more than its distance at the greatest east elongation, in February; but as it is also nearly 12° south of the Sun, the maximum interval between the rising of the Sun and the planet is only a little more than an hour, and the conditions for visibility are rather poor.

Venus is very close to the Sun throughout the month — too near to be seen, unless under exceptional circumstances. It comes to superior conjunction on the afternoon of April 30th, and becomes an evening star, to remain so for ten months.

Mars is still in good position for evening observation, but is gradually losing its brilliancy. It increases its distance from the Earth about twenty millions of miles during the month, and on April 27th its distance from the Earth is the same as the Earth's mean distance from the Sun. It is in the constellation *Leo*, and after moving a little westward it turns and moves eastward from April 5th. At the end of the month it has moved about 3° from its westernmost position. It is also continually moving southward, so that as it comes back it travels on a line much nearer *Regulus* than during its westward motion. At the end of the month it is 1° west and 2° north of the star.

By the end of April *Jupiter* and *Saturn* rise before midnight. They are a little closer together than during March, and in the constellation *Sagittarius*. Both move slowly eastward until nearly the close of the month, *Saturn* until April 25th, and *Jupiter* five days longer. *Jupiter* is then a little more than 3° west and 0° 44′ south of *Saturn*. The third-magnitude star π *Sagittarii* lies a little north and between them. The opening of *Saturn's* rings is a trifle less than it was a year ago, but has not yet diminished much from the maximum.

Uranus rises before 10 P.M. at the close of the month. It is retrograding — moving westward, in the southern extension of *Ophiuchus*. No very bright star is near it, and it is not easy to make out.

Neptune is an evening object in the western sky on the border line between *Taurus* and *Gemini*.

EXPLANATION OF THE TABLES.—The phases of the Moon are given in Pacific Standard time. In the tables for Sun and planets, the second and third columns give the Right Ascension and Declination for Greenwich noon. The fifth column gives the local mean time for transit over the Greenwich meridian. To find the local mean time of transit for any other meridian, the time given in the table must be corrected by adding or subtracting the change per day, multiplied by the fraction whose numerator is the longitude from Greenwich in hours, and whose denominator is 24. This correction is seldom much more than 1^m. To find the standard time for the phenomenon, correct the local mean time by *adding* the difference between standard and local time, if the place is west of the standard meridian, and *subtracting*, if east. The same rules apply to the fourth and sixth columns, which give the local mean times of rising and setting for the meridian of Greenwich. They are roughly computed for lat. 40°, with the noon Declination and time of meridian transit, and are intended as only a rough guide. They may be in error by a minute or two for the given latitude, and for latitudes differing much from 40° they may be several minutes out.

MARCH–APRIL, 1901.

PHASES OF THE MOON, P. S. T.

Full Moon . . .	March 5,	12^h 4^m	A. M.
Last Quarter . . .	March 13,	5 6	
New Moon . . .	March 20,	4 53	
First Quarter . . .	March 26,	8 39	P. M.
Full Moon . . .	April 3,	5 20	
Last Quarter . . .	April 11,	7 57	
New Moon . . .	April 18,	1 37	
First Quarter . . .	April 25,	8 15	A. M.

THE SUN.

1901.	R. A.	Declination.	Rises.	Transits.	Sets.
Mar. 1,	22^h 47^m	− 7° 44′	6^h 39^m A.M.	12^h 13^m P.M.	5^h 47^m P.M.
11,	23 24	− 3 52	6 23	12 10	5 57
21,	0 1	+ 0 5	6 7	12 7	6 7
31,	0 37	+ 4 0	5 51	12 4	6 17
Apr. 10,	1 14	+ 7 48	5 35	12 1	6 27
20,	1 51	+ 11 22	5 20	11 59 A.M.	6 38
30,	2 28	+ 14 39	5 7	11 57	6 47

MERCURY.

Mar. 1,	23 23	− 0 20	6 49 A.M.	12 48 P.M.	6 47 P.M.
11,	22 52	− 3 51	5 51	11 38 A.M.	5 25
21,	22 38	− 7 45	5 11	10 45	4 19
31,	22 58	− 7 56	4 52	10 25	3 58
Apr. 10,	23 38	− 4 57	4 43	10 26	4 9
20,	0 30	+ 0 25	4 38	10 39	4 40
30,	1 32	+ 7 32	4 35	11 1	5 27

VENUS.

Mar. 1,	21 50	− 14 18	6 6 A.M.	11 17 A. M.	4 28 P. M.
11,	22 38	− 10 4	5 58	11 24	4 50
21,	23 25	− 5 23	5 49	11 31	5 13
31,	0 10	− 0 28	5 40	11 38	5 36
Apr. 10,	0 56	+ 4 31	5 29	11 44	5 59
20,	1 42	+ 9 20	5 18	11 50	6 22
30,	2 29	+ 13 47	5 11	11 58	6 45

Mars.

1901.	R. A.	Declination.	Rises.	Transits.	Sets.
Mar. 1,	10 15	+15 28	4 44 P.M.	11 38 P.M.	6 32 A.M.
11,	10 1	+16 26	3 48	10 45	5 42
21,	9 51	+16 55	2 57	9 56	4 55
31,	9 46	+16 54	2 13	9 12	4 11
Apr. 10,	9 46	+16 28	1 36	8 33	3 30
20,	9 51	+15 41	1 4	7 58	2 52
30,	9 59	+14 36	12 37	7 27	2 17

Jupiter.

Mar. 1,	18 34	—22 59	3 23 A.M.	8 0 A.M.	12 37 P.M.
Apr. 1,	18 51	—22 44	1 37	6 15	10 53 A.M.
May 1,	18 57	—22 39	11 44 P.M.	4 23	9 2

Saturn.

Mar. 1,	19 0	—22 10	3 46 A.M.	8 27 A.M.	1 8 P.M.
Apr. 1,	19 9	—21 58	1 52	6 33	11 14 A.M.
May 1,	19 11	—21 55	11 56 P.M.	4 37	9 18

Uranus.

Mar. 1,	17 2	—22 47	1 51 A.M.	6 29 A.M.	11 7 A.M.
Apr. 1,	17 3	—22 49	11 49 P.M.	4 27	9 6
May 1,	17 0	—22 45	9 48	2 26	7 4

Neptune.

Mar. 1,	5 45	+22 11	11 49 A.M.	7 9 P.M.	2 29 A.M.
Apr. 1,	5 45	+22 13	9 48	5 8	12 28
May 1,	5 48	+22 15	7 53	3 13	10 33 P.M.

ECLIPSES OF *JUPITER'S* SATELLITES, P. S. T.

(Off left-hand limb as seen in an inverting telescope.)

I, D,	Mar. 3,	3^h 11^m A.M.	I, D,	Apr. 2,	5^h 5^m A.M.
I, D,	10,	5 5	I, D,	3,	11 43 P.M.
II, D,	11,	1 29	III, D,	5,	2 0 A.M.
II, D,	18,	4 2	III, R,	5,	4 41
I, D,	19,	1 27	I, D,	11,	1 37
I, D,	26,	3 21	II, D,	12,	12 58
III, R,	29,	12 42	I, D,	18,	3 30
			II, D,	19,	3 31
			I, D,	25,	5 24
			I, D,	26,	11 53 P.M.
			IV, D,	30,	11 15
			IV, R,	31,	12 1 A.M.
